

Drawings

The drawings have been objected to as failing to comply with 37 CFR 1.84(p)(5) assertedly because they include the following reference sign(s) not mentioned in the description: "27, 29" (Figs. 3A, 4A, 5A, 6A, 7A, 8A, 9-10). In this regard, it is indicated that a proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. It is further noted that the objection will not be held in abeyance.

In addition, the drawings have been objected to based on the assertion that in Figs. 3B and 4B "19" should be pointed to the larger radius of curvature. A proposed drawing correction or corrected drawings have been required in reply to the Office action to avoid abandonment of the application. Again, it is noted that the objection will not be held in abeyance.

Response to Drawing Objections

The sentence bridging pages 10 and 11 of the original specification indicates that "[p]referably, the sheet materials of the invention have an interlocking tab 27 and notch 29 as shown, for example, in Figure 3A to assure a gas seal despite minor variations in monolith circumference." Thus, it is submitted that reference signs 27 and 29 are already mentioned in the description in a manner that fully complies with 37 CFR 1.84(p)(5), so the objection should be withdrawn.

With regard to the reference sign 19 appearing in Figs. 3B and 4B, it is correctly noted in the Office action that it should be pointing to the larger radius of curvature, as shown in Fig. 1 and described at page 4, lines 11-13 of the specification. A proposed drawing correction with changes in red is attached hereto for approval.

Rejections Under 35 U.S.C. §112, 1st Para.

Claims 29-30 and 39-41 have been rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, it is asserted that the limitation in claims 29 and 39 of "no score line" is nowhere disclosed in the specification. It is noted that any negative limitation or exclusionary proviso must have basis in the original disclosure, and that the mere absence of a positive recitation is not a basis for an exclusion.

Response to Rejections Under §112, 1st Para.

In rejecting a claim under the first paragraph of 35 U.S.C. 112 for lack of adequate descriptive support, it is incumbent upon the examiner to establish that the originally-filed disclosure would not have reasonably conveyed to one having ordinary skill in the art that an applicant had possession of the claimed subject matter. *Ex parte Parks*, 30 USPQ2d 1234, 1236 (BdPatApp&Int 1993) (citation omitted). Moreover, adequate description under the first paragraph of 35 U.S.C. 112 does not require literal support for the claimed invention. *Id.* (citations omitted). Rather, it is sufficient if the originally filed disclosure would have conveyed to one having ordinary skill in the art that an applicant had possession of the concept of what is claimed. *Id.* (citations omitted). In the *Parks* decision, the Board concluded that "it cannot be said that the originally filed disclosure would not have conveyed to one having ordinary skill in the art the concept of effecting decomposition at an elevated temperature in the absence of a catalyst." *Id.* at 1238. This was despite the fact that application never stated that a catalyst was not used.

Similarly, the present application reasonably conveys to one skilled in the art that the inventors had possession of the invention now defined by claim 29; that is, a pollution control device mounting article having at least one score-line located proximate to the smaller radius of curvature and no score-line is located proximate to said larger radius of curvature. For example, such a device is clearly shown in Figs. 3B, 4B and 5B. In each of these embodiments, the pollution control element is oval shaped having larger and smaller radius of curvature. Further, the sheet material in each case is provided with score-lines only in the area adjacent to the smaller radius of curvature; the area of the sheet material adjacent to the larger radius of curvature is **positively shown** to have **no score-lines**. The specification also notes that "the sheet material 22 of Figure 4A has two pairs of scores lines 24 in top surface 23 which corresponds to the smallest radius of curvature of the monolith" (page 5, lines 17-19), and that "the score-lines are also preferably placed into the surface of the ... sheet material such that they correspond to the minimum radius of curvature of the monolith" (page 8, lines 27-29).

As a result, claims 29-30 and 39-41 are in full compliance with 35 U.S.C. §112, first paragraph, and applicants request withdrawal of these rejections.

Rejections Under 35 U.S.C. §112, 2nd Para.

Claims 29-30 and 39-41 have also been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. In this regard, it is asserted only that “[i]n claim 29, line 5 it is unclear as to where it is disclosed in the original specification that ‘no score-line is located proximate to said larger radius of curvature.’”

Response to Rejections Under §112, 2nd Para.

Claim 29 recites, *inter alia*, that “no score-line is located proximate to said larger radius of curvature.” Such language is not indefinite and claim 29 is in full compliance with 35 U.S.C. §112, second paragraph. In fact, the Office Action does not specify any manner in which the language of claim 29 might be deemed to be indefinite. Instead, it is asserted that it is unclear where that language is disclosed in the original specification. This issue, properly asserted under 35 U.S.C. §112, first paragraph, has been fully addressed above.

Thus, claims 29-30 and 39-41 are in full compliance with 35 U.S.C. §112, second paragraph, and applicants request withdrawal of these rejections.

Rejection of Claims 12-16, 18-20, 23-25, 27-28, 34, 36-38, 42-46 Under 35 U.S.C. §103

In the Office Action, claims 12-19, 23-25 and 27 were rejected under 35 U.S.C. §103 as obvious over JP 61-89916. It is stated that JP 61-89916 discloses a pollution control device and a method for making a pollution control device as claimed in the present invention. The Examiner has taken the position that JP 61-89916 discloses a pollution control device and a method for making a mounting article comprising providing a housing 3 containing a pollution control element 2 and said mounting article 1 disposed between the housing 3 and the pollution control element 2; wherein the mounting article 1 comprises a sheet material 1 having major top and bottom surfaces, a thickness, a length, a width and having a plurality of score lines in the top and bottom surfaces of the sheet material 1.

It is further asserted by the Examiner that JP 61-89916 discloses that “the score lines are disposed across the longer direction of the sheet material which appears to be the direction of the gas flowing (Fig. 2) depending on the size of the pollution control element.” In any event, the Examiner concludes that “it would have been obvious to one having ordinary skill in the art to select an appropriate direction for the score lines, e.g. across the width or the length on the basis of its suitability for the intended use as a matter of obvious design choice, absence showing any unexpected results, since JP 61-89916 discloses that any

shape, any number or any arrangement can be used for the score lines as long as to achieve the same effect (pages 3-4 of the translation of JP '916 – PTO: 99-3188) and since applicants also admit on page 6, lines 28-31 that the score lines can extend in any direction: across the width or length of the sheet material, i.e. parallel or perpendicular to the gas flow.”

Response to Rejections of Claims 12-16, 18-20, 23-25, 27-28, 34, 36-38, 42-46

Independent claims 12, 28 and 34 define pollution control devices or mounting articles comprising a sheet material useful for mounting a pollution control element and preventing exhaust gas from bypassing the pollution control element. The sheet material has at least one score-line in the major top surface and across the entire width of the sheet to relieve surface tension in the sheet material when the sheet material is disposed around the curvature of the pollution control element.

Applicants' invention, as defined in claims 12, 28 and 34, is patentable over JP 61-89916. Claims 12, 28 and 34 require that the at least one score-line be across the entire width of the sheet material. It is only with such a structure that several of the advantages of the invention are realized. With the score-line(s) across the width of the sheet material, surface tension in the sheet material will be relieved when the sheet is wrapped around the outer curvature of the pollution control element. This recited structure thus provides for the prevention of undesirable cracking or breaking of the sheet material. Further, positioning of the score-line(s) across the entire width of the sheet material requires less of the sheet material in order to completely wrap a monolith than a sheet material without one or more score-lines across its width. See, for instance, Examples 1-3 and Comparative Example C1, page 11 line 18 to page 12, line 16.

In direct contrast to applicants' claimed invention, and contrary to the Examiner's assertion, the grooves or “continuous concaves 1a” of JP 86-89916 extend only in the length direction of the material, rather than across its width. JP 86-89916 unambiguously teaches in the second full paragraph on page 3 of the PTO translation that the “grooves 1a are continuously provided onto both surfaces of a seal mat 1 in the longer lateral direction.” (emphasis supplied).” It is further indicated, in the first full paragraph on page 2 of the PTO translation, that “said mats are wound up to more than the halfway in length direction...” (Fig. 2).” Thus, the grooves or continuous concaves 1a run the length of the mat, circumferentially about the honeycomb catalyzer, and perpendicular to the gas flow through the pollution control device.

The Examiner's reliance on Fig. 2 of JP 86-89916 is misplaced, as that Figure clearly supports, rather than contradicts, applicants' interpretation of the document. The dimensions of Fig. 2 show that the circumference of the honeycomb catalyzer is greater than its length, so that the longer direction of the mat of JP 86-89916 (the direction in which the concaves 1a extend) extends about the circumference of the honeycomb catalyzer. The examples of JP 86-89916 also support applicants' interpretation, as the honeycomb catalyzer in the examples is said to have a diameter of 10 cm (thus a circumference greater than 31 cm) and a length of only 20 cm (PTO translation page 5, second full paragraph). JP 86-89916 is devoid of any teaching or suggestion for forming at least one score-line across the entire width of the sheet material and in the direction of exhaust gas through the device.

Moreover, the grooves in the mat of JP 86-89916 are designed solely to reduce the excessive occurrence of compressive pressure on the pollution control element while maintaining an excellent air-tight capability. See PTO translation page 1, paragraph 3 and page 2, first full paragraph. The grooves 1a of JP 86-89916 define gaps in the surface of the sheet material, so that when excessive compressive force is applied, a part of the projections b on the surface of the seal-mat move into the concaves 1a and the compressive force is reduced, preventing breakage of the honeycomb catalyzer. In this regard, according to the translation of JP 86-89919 submitted by applicants, "the shape and number of concaves ... are not limited as long as the above-mentioned effect can be achieved." Page 5, lines 8-10 (emphasis supplied). While the PTO translation (pages 3-4) is slightly different, stating that "[a]s long as said effect is obtained, any shape, any number, and any arrangement means can be used for the grooves," there is in neither case any suggestion that the direction of the grooves 1a can or should be altered so that they extend across the entire width of the sheet material as defined by the claims. In fact, according to the PTO translation, JP 86-89919 continues by providing that "grooves with a wave surface, grooves with a groove that has an in-line arrangement, or grooves with discontinuous multiple depressions can be given other than grooves as shown in Fig. 1." Obviously, JP 86-89916 did not contemplate the use of a score-line extending across the entire width of the sheet material.

In addition, the sheet material of JP 86-89916 would be unlikely to maintain its "excellent air-tight capability" if the grooves on both the top and bottom surfaces of the sheet material were positioned in the direction of the gas flow through the device. If the grooves in JP 86-89916 were positioned across the entire width of the sheet material, as applicants' claim, exhaust gas may flow through the spacing between the housing and the sheet material or through the spacing between the sheet material and the pollution control element (See Fig.

2). In contrast, with the grooves extending in the direction of the length of the sheet material (and hence about the circumference of the honeycomb catalyzer and perpendicular to the flow of gas through the device), the exhaust gas cannot leak through grooves 1a. There is thus no motivation to modify JP 86-89916 as proposed, since such a modification would render the disclosed device unsatisfactory for its intended purpose. *In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1994).

Finally, while applicants' specification may indicate that, in its broadest sense, the invention covered at least one score-line extending across the width or the length of the sheet material, it is unequivocally stated to be preferred to provide the score-line(s) across the width of the sheet material (see for example, specification page 7, lines 2-3). All of the examples include score-lines across the width of the sheet material, and all of the drawing figures show the score-lines extending across the width of the sheet material. Examples 1-3 and Comparative Example C1 clearly show that, with score-lines across the width of the sheet material, less material is required to completely wrap the monolith. Examples 5-7 and Comparative Examples C2 and C3 clearly show that, with score-lines across the width of the sheet material, surface cracking is avoided.

With such a clear indication of the preferred embodiment, it is improper for the Examiner simply to ignore the differences between the invention defined by applicants' claims and JP 86-89916 on the basis that the application also discloses a less preferred embodiment, aspects of which may be disclosed in the prior art.

For all of these reasons, independent claims 12, 28 and 34, as well as the remaining claims that depend directly or indirectly therefrom, are patentable over JP 86-89916.

Rejections of Claims 19-20 Under 35 U.S.C. §103

Claims 19-20 were rejected under 35 U.S.C. §103 as obvious over JP 61-89916, as applied previously, in view of JP 2-61313. JP 2-61313 was cited as disclosing a sheet material comprised of inorganic fiber, vermiculite, etc., e.g. intumescent material.

Response to Rejections of Claims 19-20

Claims 19-20 depend, either directly or indirectly, from claim 12. While disclosing an intumescent material, JP 2-61313 supplies none of the deficiencies of JP 86-89916 discussed above with regard to claim 12. Thus, each of these claims is patentable at least on the basis of this dependency from a patentable base claim.

Rejections of Claims 29-31, 39-41 Under 35 U.S.C. §103

Claim 29-31 and 39-41 were rejected under 35 U.S.C. §103 as being unpatentable over JP 61-89916 in view of Corn (5,332,609). The Examiner cites Corn for disclosing an oval shape for a pollution control element, and concludes that it would have been obvious to select an appropriate shape for the pollution control element.

Response to Rejections of Claims 29-31, 39-41

Claims 29-31 depend, either directly or indirectly, from claim 28. While Corn discloses an oval shaped pollution control element, it supplies none of the deficiencies of JP 86-89916 discussed above with regard to claim 28. Thus, each of these claims is patentable at least on the basis of this dependency from a patentable base claim.

In addition, independent claim 39 defines a pollution control device comprising a pollution control element having an oval shaped cross section and a mounting article disposed between the pollution control element and a housing. The mounting article comprises a sheet material useful for mounting the pollution control element and preventing exhaust gas from bypassing the pollution control element. The sheet material has at least one score-line proximate the smaller radius of curvature of the oval pollution control element and extending across the width of the sheet material in a direction parallel to gas flow through the pollution control element. The sheet material has no score-line located proximate the larger radius of curvature of the oval pollution control element.

The structure defined by claim 39 thus provides at least one score-line in an area of high surface tension, with no score-lines in areas of lower surface tension. This structure advantageously relieves surface tension and prevents cracking of the sheet material, while also reducing the amount of sheet material required to wrap a given pollution control element. See specification page 5, second paragraph.

JP 61-89916, on the other hand, discloses a sheet material having grooves 1a extending across the length of the sheet material in a direction perpendicular to gas flow through the pollution control element. As discussed above, JP 61-89916 lacks any suggestion or motivation for providing a groove across the width of the sheet material, and clearly further lacks any suggestion for providing at least one score-line proximate the smaller radius of curvature of an oval pollution control element, with no score-lines proximate the larger radius of curvature of the oval pollution control element.

Corn discloses a two-layer mounting mat that is devoid of any score-lines, and thus fails to supply any of the deficiencies of JP 86-89916 in this regard. The references, either

individually or in combination, fail to teach or suggest the invention as defined in claim 39. Withdrawal of the rejection of claim 39, as well as claims 40 and 41 which depend from claim 39, is therefore respectfully requested.

Rejection of Claims 12-16, 18-20, 23-25, 27-28, 34, 36-38, 42-46 Under 35 U.S.C. §103

In the Office Action, these claims were also rejected under 35 U.S.C. §103 as obvious over JP 2-61313 in view of JP 61-89916. The Examiner takes the position that JP 2-61313 discloses a pollution control device and method of making a mounting article for a pollution control device comprising a housing containing a pollution control element 1 and said mounting article 5 disposed between the housing and the pollution control element 1, wherein the mounting article 5 comprising a sheet material 5 having major top and bottom surfaces, a thickness, a length, a width and having a plurality of score lines 11 in the top and bottom surfaces of the sheet material 5 and across the width of the sheet material 5. JP 61-89916 is applied as noted above with regard to the previous rejection of these claims.

Applicants' Response to the Rejection Under 35 U.S.C. §103

As discussed above, independent claims 12, 28 and 34 require that at least one score-line extend across the entire width of the sheet material. It is only with such a structure that several of the advantages of the invention are realized. Thus, with the score-line(s) across the width of the sheet material, surface tension in the sheet material will be relieved when the sheet is wrapped around the outer curvature of the pollution control element. This recited structure thus provides for the prevention of undesirable cracking or breaking of the sheet material. Further, positioning of the score-line(s) across the entire width of the sheet material requires less of the sheet material in order to completely wrap a monolith than a sheet material without one or more score-lines across its width.

Neither the recited structure, nor any of the resulting advantages, are taught or suggested by the cited prior art references. JP 2-61313 describes a structure for purifying exhaust gas including a buffer material 5 wrapped around the outer circumference of a ceramic honeycomb 1 and housed in a steel container 6. The buffer material is either provided with holes (translation page 9, lines 1-3) or alternatively, "the same effect can be achieved when the buffer material has a structure where many fine grooves formed diagonally on the surface as in the case of Fig. 2" (translation page 9, lines 13-14). The purpose of these holes or diagonal grooves is to increase the frictional force and to reduce the level of heat conducted by the buffer material.

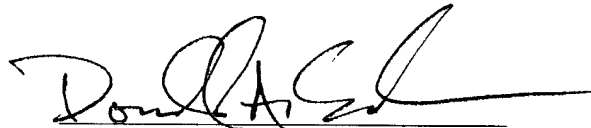
Hence, JP 2-61313 lacks any suggestion for positioning a score-line(s) across the entire width of the sheet material. The deficiencies of JP 61-89916 in this regard are discussed at length above. The references, either individually or in combination, fail to teach or suggest the invention as defined in independent claims 12, 28 and 34. Withdrawal of the rejection of these claims, as well as those claims which depend therefrom, is therefore respectfully requested.

Conclusion

In view of the foregoing amendments and remarks, favorable reconsideration of the present application, and the passing of this case to issue with all claims allowed, is courteously solicited.

Should the Examiner wish to discuss any aspect of this application, applicants' attorney suggests a telephone interview in order to expedite the prosecution of the application.

Respectfully submitted,



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